

CLAIMS

1. Fixing device comprising (I) a surgical cable (16, 416) having a first and a second end and (II) at least a first (2, 402) and a second (4, 404) fixing plate having a first (6, 406) resp. second (8, 408) central hole and a first (10, 410) resp. second (12, 412) ring surrounding said first (6, 406) resp. second (8, 408) hole, the circumference (20, 420, resp. 22, 422) of each fixing plate forming an outer edge of its ring (10, 410, resp. 12, 412) and an inner edge of its ring (10, 410, resp. 12, 412) being adjacent to the hole (6, 406, resp. 8, 408) it surrounds, the first fixing plate (2, 402) being in a stacked position on top of the second plate (4, 404) leaving a gap (26, 426) between the plates (2, 402, 4, 404) and the holes (6, 406, resp. 8, 408) at least partly overlapping each other, wherein in the ring of one of the fixing plates (2, 402 resp. 4, 404) in its surface facing the other fixing plate (4, 404 resp. 2, 402) a continuous groove (50, 450) is present running between the outer edge and the inner edge of said ring and in the ring of the other fixing plate (4, 404 resp. 2, 402) in its surface facing the one of the fixing plates (2, 402 resp. 4, 404) a ridge (52, 452) is present matching with said groove (50, 452), and wherein at least one end of the cable (16, 416) following a continuous trajectory running as part (j) from outside the outer edges underneath the second ring (12) up to the second hole (8), bending upward into a first upward part (a) running through the second and the first holes (8, 408 resp. 6, 406), a bend to an outward part (b) running across the first ring (10, 410) in the direction of its outer edge (20, 420), a downward part (c) outside said outer edge (20, 420) running in a direction opposite to the upward part (a), a part (d) running through the hole (8, 408) of the second ring (12, 412), part (d) at its one end being connected to a trajectory part (e) running through the gap (26, 426) between the fixing plates (2, 402 resp. 4, 404) and at its other end being connected to a trajectory part (f,g) running underneath the second ring (12, 412), the other end of the cable (16, 416) also being connected to the fixing plates (2, 402 resp. 4, 404).
2. Device according to claim 1, wherein part (c) further runs outside the outer edge (22) of the second ring (4) and is connected to one end of part (d) through trajectory part (f) running underneath the second ring (12) from its outer edge (22) to its hole (8) and the other end of part (d) is immediately

- connected to part (e) running through the gap (26) between the fixing plates in an outward direction and ending outside the plates in a cable end (28).
3. Device according to claim 1, wherein the trajectory parts are in the order (a), (b), (c), (e), (d), followed by trajectory part (g) running underneath the second ring (412) from the hole (408) to the outer edge (422) and ending outside the plates in a cable end (428).
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4. Device according to any one of claims 1-3, wherein (j) and (a) are connected through an additional complete loop, beginning at the end of (j), running in an upward direction through holes (8, 408) and (6, 406), then in an outward direction across the first ring (10, 410), then in a downward direction along outer edges (20, 420 and 22, 422), then in an inward direction underneath the second ring (12, 412) and finally connecting to trajectory (a).
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5. Device according to claims 1-4, wherein the other end of the cable also follows one of said trajectories.
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6. Device according to claim 1-4, wherein the other end (530, 630) is fixed to a tensioning device that is connected to the fixing rings.
7. Method for tying objects together, in particular for fixing bone parts, comprising the steps of applying a fixing device according to claims 1 to 5 around the bone parts (17, 417) to be fixed, followed by drawing the ends (28, 428, 30, 430) of the cable to tension the cable around the bone parts to the tension required to fix the bone parts.
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8. Method according to claim 7, wherein a bar (14, 414) is inserted between the fixing plates (2, 402, 4, 404) before the cable is tensioned and removed after the cable has been tensioned.
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9. Method for tying together objects, in particular for fixing bone parts, comprising the steps of applying a bone fixing device according to claim 6 around the bone parts to be fixed, followed by drawing said one end (528, 628) of the cable to tension the cable around the bone and then tensioning the cable to the tension required to fix the bone parts by means of the tensioning device (536, 646).
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10. Set of two fixing plates (2 resp. 4) each having a central hole (6 resp. 8) and a ring (10 resp. 12) surrounding said hole (6 resp. 8), the circumference of each fixing plate (2 resp. 4) forming an outer edge (20 resp. 22) of its ring (10 resp. 12) and an inner edge (of its ring (10 resp. 12) being adjacent to the hole (6 resp. 8) it surrounds, wherein in the ring (10 resp. 12) of one of the fixing
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plates(2 resp. 4) in its surface a continuous groove (52) is present running between the outer edge (20 resp. 22) and the inner edge of said ring (10 resp. 12) and in the ring(12 resp. 10) of the other fixing plate(4 resp. 2) in its surface a ridge (50) is present matching with said groove (52).

- 5    11.    Set of at least two fixing plates according to claim 10 and a surgical cable fitted for constructing a fixing device according to any of claims 1 to 6 or for application in the method of any of claims 7-9.
12.    Surgical cable prepared for application in a fixing device according to any of claims 1 to 6 or for application in the method of any of claims 7-9.